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10/648,624	08/25/2003	Robert Hoffman	ANDIP035	5322

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EXAMINER
HAN, CLEMENCE S

ART UNIT	PAPER NUMBER
2464	

NOTIFICATION DATE	DELIVERY MODE
06/23/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>04 April 2011</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,3-14,16-25 and 29-33</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,3-14,16-25 and 29-33</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

2.   Claims 11-14 and 16-21 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention.

Claims 11, 14, 18, 19 and 21 have limitations that invoke 35 U.S.C. 112, sixth

paragraph. However, the written description fails to clearly link or associate the

disclosed structure, material, or acts to the claimed functions such that one of ordinary

skill in the art would recognize what structure, material, or acts perform the claimed

functions. For example, the written description of the specification fails to clearly link or

associate the disclosed structure, material, or acts to the associating the physical queue

with the ingress port in claim 11 line 11.

Applicant may:

(a)   Amend the claims so that the claim limitations will no longer be interpreted

as a limitation under 35 U.S.C. 112, sixth paragraph; or

(b)   Amend the written description of the specification such that it clearly links

or associates the corresponding structure, material, or acts to the claimed functions

without introducing any new matter (35 U.S.C. 132(a)); or

(c)   State on the record where the corresponding structure, material, or acts

are set forth in the written description of the specification and linked or associated to the

claimed functions. For more information, see 37 CFR 1.75(d) and MPEP §§ 608.01(o)

and 2181.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by
> another filed in the United States before the invention by the applicant for patent or (2) a patent
> granted on an application for patent by another filed in the United States before the invention by the
> applicant for patent, except that an international application filed under the treaty defined in section
> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States
> only if the international application designated the United States and was published under Article 21(2)
> of such treaty in the English language.

4.   Claims 1, 3-14, 16-25, 29 and 31-33 are rejected under 35 U.S.C. 102(e) as

being anticipated by Brown et al. (US 7,046,687).

Regarding claim 1, 11, 22 and 23, Brown teaches a method of allocating queues

in a network device, the method comprising: receiving a packet at an ingress port 1102

of a network device, wherein the ingress port has a plurality of virtual queues 1110

(Column 22 Line 31-45); making a classification for the packet according to a virtual

queue from said plurality of virtual queues (Brown teaches classifying based on

destination port address and priority level in Column 24 Line 1-19, also see Figure 11B);

determining, by searching a memory of allocated physical queues 1402, 1404, whether

a previously- allocated physical queue exists for the classification ("locates an entry ..

that has the same destination address and priority level" in Column 36 Line 52-55, see

also step 1802 in Figure 18); allocating a physical queue for the classification

corresponding to the virtual queue when no previously-allocated physical queue exists

for the classification ("If there is no entry, i.e., no active VOQ, with the same destination

address ... creates a new entry ... to track a new active VOQ" in Column 36 Line 57-61,

see also step 1802 in Figure 18); associating the physical queue with the ingress port

(iVOQs 1110 is associated with iReveiver 1102, see Figure 11A); storing information

associated with the packet in the allocated physical queue (step 1802-step 1806),

wherein the information comprises pointer information for the packet (The entry stored

in the physical queue has "Head Pointer" and "Tail Pointer" fields, see Figure 16A and

Figure 16B); and scheduling the packet for transmission between the ingress port and

one of a plurality of egress ports of the network device (Column 23 Line 30-33, see also

Figure 19).

Regarding claim 3 and 13, Brown teaches the virtual queue is a virtual output

queue 1110.

Regarding claim 4 and 14, Brown teaches detecting when a previously-allocated

physical queue is empty; and de-allocating the empty previously-allocated physical

queue (Column 36 Line 61-44, also see Column 27 Line 43-46).

Regarding claim 5 and 12, Brown teaches the virtual queue is associated with an

ingress port (iVOQs 1110 is associated with iReveiver 1102, see Figure 11A).

Regarding claim 6 and 16, Brown teaches the classification is based on one or

more of a packet source, a packet destination, an ingress port number, an egress port

number, or a packet priority (Column 24 Line 1-19, also see Figure 11B).

Regarding claim 7 and 17, Brown teaches the classification comprises a priority number (priority level in Column 36 Line 57).

Regarding claim 8 and 18, Brown teaches the determining step comprises addressing the memory of allocated physical queues in a single cycle (Brown teaches using CAM 1402 and its contents can be searched in one cycle, see instant specification Page 16 Line 16-17).

Regarding claim 9 and 19, Brown teaches updating a memory when a physical queue is de-allocated, wherein the memory indicates whether the classification corresponds to the previously-allocated physical queue (Column 36 Line 61-44, also see Column 27 Line 43-46).

Regarding claim 10, 20 and 21, Brown teaches the network device further comprises a free list that indicates physical queues available for allocation and wherein the method further comprises updating the free list when the previously-allocated physical queue is de-allocated (Column 27 Line 8-31, see also Figure 11C).

Regarding claim 24, Brown teaches the content addressable memory is searchable in one clock cycle (Brown teaches using CAM 1402 and its contents can be searched in one cycle, see instant specification Page 16 Line 16-17).

Regarding claim 25, Brown teaches the memory is a random access memory 1401.

Regarding claim 29, Brown teaches determining a first number of packets that the ingress port of the network device can receive (1024 for example in Column 36 Line 17-24); and allocating a second number of physical queues for the ingress port, wherein

the second number is less than or equal to the first number (256 for example in Column 36 Line 25-33).

Regarding claim 31, Brown teaches identifying a category for each packet arriving at the ingress port (Column 24 Line 1-19, also see Figure 11B and "locates an entry ... that has the same destination address and priority level" in Column 36 Line 52-55, see also step 1802 in Figure 18); correlating the category to an existing physical queue (Column 36 Line 55-57); and storing packet information in the existing physical queue (step 1802-step 1806).

Regarding claim 32, Brown teaches identifying a category for each packet arriving at the ingress port (Column 24 Line 1-19, also see Figure 11B and "locates an entry ... that has the same destination address and priority level" in Column 36 Line 52-55, see also step 1802 in Figure 18); and assigning the category to a physical queue, wherein the network device allocates a new physical queue only when there is no existing physical queue for the category ("If there is no entry, i.e., no active VOQ, with the same destination address ... creates a new entry" in Column 36 Line 57-61, see also step 1802 in Figure 18).

Regarding claim 33, Brown teaches the packet information comprises control information selected from a list consisting of destination information, source information, priority information, payload type information and payload size information (step 1802-step 1806).

5.   Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. in view of Ciancaglini et al. (US Pub. 2005/0089054).

Regarding claim 30, Brown teaches a method of allocating queues in a network

device, the method comprising: receiving a packet at an ingress port 1102 of a network

device, wherein the ingress port has a plurality of virtual queues 1110 (Column 22 Line

31-45); making a classification for the packet according to a virtual queue from said

plurality of virtual queues (Brown teaches classifying based on destination port address

and priority level in Column 24 Line 1-19, also see Figure 11B); determining, by

searching a memory of allocated physical queues 1402, 1404, whether a previously-

allocated physical queue exists for the classification ("locates an entry .. that has the

same destination address and priority level" in Column 36 Line 52-55, see also step

1802 in Figure 18); allocating a physical queue for the classification corresponding to

the virtual queue when no previously-allocated physical queue exists for the

classification ("If there is no entry, i.e., no active VOQ, with the same destination

address … creates a new entry … to track a new active VOQ" in Column 36 Line 57-61,

see also step 1802 in Figure 18); associating the physical queue with the ingress port

(iVOQs 1110 is associated with iReveiver 1102, see Figure 11A); storing information

associated with the packet in the allocated physical queue (step 1802-step 1806),

wherein the information comprises pointer information for the packet (The entry stored

in the physical queue has "Head Pointer" and "Tail Pointer" fields, see Figure 16A and

Figure 16B); and scheduling the packet for transmission between the ingress port and

one of a plurality of egress ports of the network device (Column 23 Line 30-33, see also

Figure 19). Brown also teaches determining a first number of packets that the ingress

port of the network device can receive (1024 for example in Column 36 Line 17-24); and

allocating a second number of physical queues for the ingress port, wherein the second

number is less than or equal to the first number (256 for example in Column 36 Line 25-

33). Brown, however, does not teach the network device operates according to a Fibre

Channel protocol and wherein the determining step is based on a number of buffer-to-

buffer credits granted by the ingress port. Ciancaglini teaches the network device

operates according to a Fibre Channel protocol [0132] and wherein the determining step

is based on a number of buffer-to-buffer credits granted by the ingress port [0132]. It

would have been obvious to one skilled in the art to modify Brown to be with the

network device operates according to a Fibre Channel protocol and wherein the

determining step is based on a number of buffer-to-buffer credits granted by the ingress

port as taught by Ciancaglini in order to provide efficient and reliable data transport in

storage environment [0011].

Response to Arguments

6.   Applicant's arguments filed 04/04/2011 have been fully considered but they are

not persuasive. In response to page 8-10, the applicant first argues Brown's virtual

output queues store packets and not the pointer information regarding the packets. The

examiner agrees with the applicant's position. Brown teaches virtual output queues

1401 storing packets (cells) and physical queue 1402, 1404 storing the pointer

information regarding the packets. However, it is noted that the features upon which

applicant relies (i.e., storing pointer information for a packet (or cell) in a virtual queue)

are not recited in the rejected claim(s). Although the claims are interpreted in light of

the specification, limitations from the specification are not read into the claims. See *In*

re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, the

examiner notes the instant specification teaches physical queue 620, not virtual output

queues 650, storing the pointer information regarding the packets. The examiner

respectfully direct the applicant's attention to the new grounds of 112 rejection regarding

claims 11-14 and 16-21. The detailed explanations regarding links between the parts

(for example, Figure 6) with each of the steps recited in the claims are respectfully

requested.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to CLEMENCE HAN whose telephone number is

(571)272-3158. The examiner can normally be reached on Monday-Friday 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Clemence Han/
Examiner, Art Unit 2464